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Digital Practices and contemporary city. A parametric approach to the Urban and Architectural Design

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Synopsis

In the era of the information society and the economy of knowledge we are facing a substantial change of relations with the physical world.

This way of thinking is due to the impact that digital tools have had in every field of knowledge and in large part of the aspects that characterize the daily lives of people. In this framework the contemporary city itself represents a field of experiment in which this kind of tools are playing a fundamental role in the development of future systems and scheme of development process.

The application of digital parametric drawing tools in the urban design requires to change completely the way of thinking the project process, in that sense this affects the way of conceive the urban and architectural design process, in a positive way through the enrichment of new possibilities of forms and more efficient and sustainable architectures. This is possible through an appropriate reflection on the influence of the drawing tools on the architectural and urban design.

The proposed paper want to focus on the role that new tools, that permit to include different kind of data and parameters in the definition of the project idea, have had in the development of the architectural and urban design project, especially in the setting up of a new language and syntactic models. The use of digital parametric design tool differently from the traditional design tool implies a more strict connection between ideation and design process.

Key words: Ideation, project process, architectural design, contemporary city.

1. Approach to the question

If design tools and drawing have had a great influence in the evolution of architectural language, nowadays the parametric design tools represent a different way to conceive the project connecting imagination and practice. These tools have the value of managing an innumerable amount of data and parameters that help to interpret the actual complex urban context of the contemporary city in a more comprehensive way. There is a slight change in position from an exclusively spatial perspectiveto a topological one, focused on relationships and interactionsbetween people, places and institutions at every scale. (C. Ratti, D. Offenhuber, 2014)

The proposed topic has been developed in a research within the topic of the relation between the graphic ideation and architecture, and the importance of the role of the architect (as the “mind” that manage the tool) in the development of the project process even using digital and parametric tools.

The research has been developed during the didactic activity related to the development of a final project on the regeneration of the area of Scampia in Naples. In this particular case the demolishing of the “Vele” is going to generate a great urban void – a tabula rasa - that needs a strength in the ideation of a new idea of this “generic city”. Starting from the recent study on Open Data and Decoding the City, we think that today it is necessary a change in the way of thinking the project process, especially on the planning of the contemporary city, and a new approach to ideation through the use of graphical algorithm editor tools.

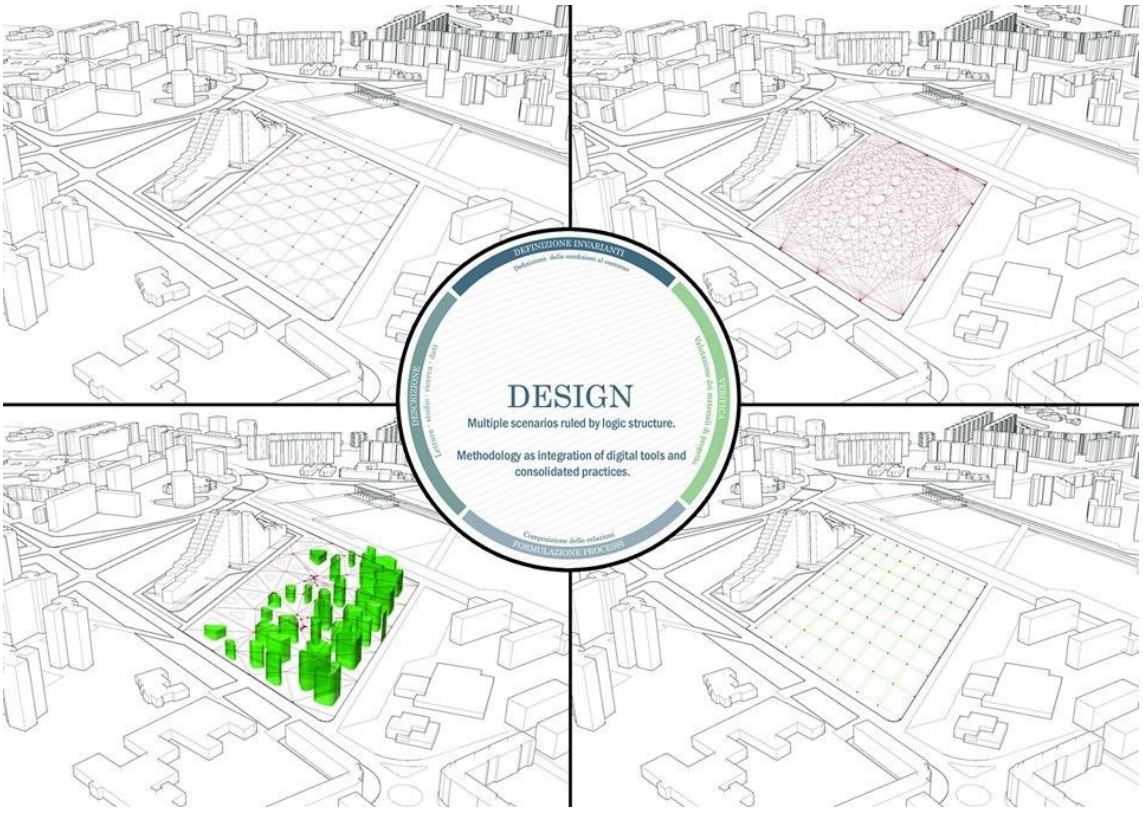

Figure 1.

2. Objectives proposed and achieved

How this tools may enrich and influence the work of architects and urban designers, adding or changing the way of thinking the development of an architectural project?

At the beginning of the 19th century James Dana in his study “On the Drawing of Figures of Crystals”, started to discuss about the relation between data and parametric design project, in the recent times the Italian architect Luigi Moretti has been introducing the definition of Architecture as a structure of "complex relationships" and in its concrete character, as a structure of “energy density” that includes spaces. Today a wide range of different applications have been developed in different cases in the project of large scale (from Michael Batty to Carlo Ratti Associates), a critical lecture of these applicationsrepresent the basis for the development of the proposed research that wants to focus mainly on the debate between the graphic ideation and the project process in urban and architectural design.

The objectives of the proposed research are:

- to demonstrate that the drawing parametric tools (as Grasshopper for example), integrated to the traditional and consolidated practices for urban design drawing tools, could represent an extremely powerful resource in creating complex processes that require a management of a great number of data in the urban planning practices and in the definition of planning solutions for the design of difficult contexts of the contemporary city, were the need is not only to define the appropriate architectural form of a plan, but to include in the project a lot of different parameters that deal with the social, political and economic spheres.

- to demonstrate that considering the fact the drawing tools has a powerful influence on the planning strategy and on the relation between the citizens, the politician and the technicians, is possible to use the new technologies in order to involve the people in the strategic decision.

The expected results are:

- the definition of a method that permit in a simple way - through the application of the knowledge in the use of parametric digital design tools- to define awider range of possible project solutions through the use of graphical algorithm editor tools, based on the use of open data

- to fill the gap between the people whom the project is targeted, technician and decision-makers, using the drawing digital parametric tools as a crucial instrument to drive the design process.

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Biography

Giuseppe Marsillo. Artistic and architectural training, always passionate about new technologies, comprehension of phenomenons and design process, from traditional design to computational morphogenesis. Master degree in architecture at “Università degli studi di Napoli Federico II” with the thesis “Digital practices and contemporary city, parametric methods for urban design”. During the years I joined working experiences in companies and professional studios, concerning architectural design, product, interior and lighting design starting my architecture and design office in 2017. Currently studying “Management of the complex architectural project” at Università “La Sapienza”, Roma.